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GOVERNOR

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

STEPHEN CHUSTZ
INTERIM SECRETARY
JAMES H. WELSH
COMMISSIONER OF CONSERVATION

**FOURTH AMENDMENT TO DECLARATION OF EMERGENCY
AND DIRECTIVE**

Pursuant to the authority granted to the Commissioner of Conservation and Assistant Secretary of the Louisiana Department of Natural Resources under La. R.S. 30:1, et seq., particularly La. R.S. 30:6.1, this **FOURTH AMENDMENT TO THE DECLARATION OF EMERGENCY AND DIRECTIVE** is hereby issued;

It is hereby declared that since issuance of the Third Amendment to Declarations of Emergency and Directive effective October 11, 2012 and issued to Texas Brine Company LLC (T149) concerning subsidence that has occurred immediately adjacent to OXY GEISMAR NO. 3 well site (Serial Number 180708), the associated salt cavern, and the OXY GEISMAR NO. 3A observation well (Serial Number 974265), the following evidence has been found:

- 1) Eighteen (18) direct push (“geoprobe”) wells were installed by DNR’s agent Shaw Environmental & Infrastructure to depths of between 18 and 36 feet BGS in locations near the Bayou Corne community of Assumption Parish, Louisiana. These geoprobe wells were installed into the fine-grained sand units within the clay aquitard overlying the Mississippi River Alluvial Aquifer; and they have been tested and evaluated for natural gas pressure.
- 2) Tests of these wells demonstrated positive pressures in fifteen (15) of the eighteen (18) wells. Wellhead pressures ranged from slightly above zero (0) to thirteen (13) psi. Methane concentrations ranged from 2% to 93% by volume. Three (3) of these wells were bled off and tested for recovery. All three of the wells tested for recovery demonstrated that the pressures rebounded within a matter of hours. Finally, four (4) of the well vaults had positive lower explosive limit (LEL) readings, ranging from 5 – 100%.
- 3) Performing a simple gas-flow Darcy calculation indicates that at the pressure being observed, the volumetric methane flow rate is low, on the order of 0.01 cubic feet per day (cfd) per square foot (sf) of surface area or 20 cfd over 1,000 sf area. Even at this low flow rate, however, methane can accumulate in slab-on-grade structures within unventilated enclosed spaces to a concentration greater than the lower explosive level (“LEL”) concentration of 5.1%.
- 4) The areal extent of the bubbling as well as the pressure data indicates that steps to abate the gas accumulation in the MRAA, and the shallower subsurface is warranted to protect public safety.
- 5) Based on site topography, observations, and the presence of known contaminants within the surface water of the sinkhole, there is a threat to the environment from the potential discharge out of the sinkhole considering that the surface water elevation is expected to rise in the near future due to seasonal variations in surface water levels in the area.



Therefore, until further notice to the contrary, based upon the evidence and findings described both previously and herein, it is determined that the requirements for declaring an Emergency pursuant to La. R.S. 30:6.1 have been and continue to be met and an emergency is declared to exist due to those incidents which have occurred, are occurring, or threaten to occur imminently at the OXY GEISMAR NO. 3 well site (Serial Number 180708), its associated cavern, and adjacent/nearby properties.

It is hereby declared that in response to the emergency subsidence incident and gas migration events covered herein and by the emergency declaration and amended emergency declarations effective August 3, 2012, August 9, 2012, September 25, 2012, and October 11, 2012 respectively, Texas Brine Company LLC (T149) is **hereby ordered** to undertake any and all necessary actions to assess for and abate threats to safety and the environment, including the abatement of natural gas accumulation in the aquifer and aquitard.

It is further declared that Texas Brine Company LLC (T149) is specifically directed and is **hereby ordered** to undertake the necessary actions to address the potential danger to human life associated with the gas pressures mentioned above and at a minimum perform all of the following within the deadlines set forth below:

1) Immediately upon obtaining permission of the owner(s), upgrade ventilation of slab-on-grade homes or slab-on-grade structures by providing for ventilation improvements on spaces within the structure that are not adequately ventilated, and provide for the installation in these spaces permanent LEL instrumentation connected to an alert/monitoring system continuously monitored by a bonded/qualified independent contract response team to immediately respond to all alarms for all homes or structures with slab-on-grade construction located within the evacuation area established by Assumption Parish. Adequacy of ventilation shall be based on a visual assessment of slab-on-grade home and structure spaces by an independent qualified contractor who shall document those spaces that do not have adequate air exchange (e.g. closets, furnace areas, hot water heater rooms, etc.) and shall document that the ventilation improvements provide appropriate ventilation. In order to comply with this directive and order, Texas Brine Company LLC (T149) may also undertake other actions which are of equal or greater protective value to the protection of public safety as approved by this office that may terminate the necessity for continuous monitoring as described herein.

2) In conjunction with and in addition to the wells ordered by directives 2 & 8 in the Third Amendment to the Declaration of Emergency and Directive, install additional groundwater observation/vent wells at the locations depicted on the attached "Figure 1" to this declaration and vent natural gas where found in the MRAA or in the shallower subsurface as expeditiously as possible but no later than November 27, 2012. At least one direct push well, such as a Geoprobe well, to monitor water quality

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and subsurface pressures shall be installed at every observation/vent well site. In addition permanent elevation benchmarks using the design developed in response to Directive #2 of the Third Amendment to the Declaration of Emergency and Directive shall be installed at each direct-push well location by a professional land surveyor. In implementing this directive, undertake negotiations to quickly reach agreement with the property owners to access any property needed to install these wells.

If the landowner refuses to allow access and/or delays the installation of these wells, provide evidence in writing to this office and to the Assumption Parish Office of Homeland Security and Emergency Preparedness as soon as possible, but no later than the November 27, 2012 deadline. Should conditions for access to any of the locations depicted require additional time to initiate venting, provide documentation thereof and a schedule for expeditious implementation to this office.

3) In conjunction with and in addition to the wells ordered by directives 2 & 8 in the Third Amendment to the Declaration of Emergency and Directive, prepare and provide to this office a plan for the installation of additional groundwater observation/vent wells to abate and remove the natural gas currently in the MRAA and in the shallower subsurface underneath the areas where habitable structures or roadways exist by no later than November 16, 2012. The plan shall include a well location map, well and vent design drawings, calculations to support well locations and projected venting rates, predictions of time to reduce methane pressures to safe levels, and a monitoring program for the entire system. The well and vent designs shall be certified by a professional engineer. At least one direct push or other small diameter monitoring well, such as a Geoprobe well, to monitor water quality and subsurface pressures shall be installed at every observation/vent well site. In addition permanent elevation benchmarks shall be installed at each direct-push well location by a professional land surveyor.

Implement installation of observation/vent wells and the accompanying direct-push wells with permanent elevation benchmark no later than seven (7) days after receipt of approval of said plan from this office.

4) Begin daily operation, maintenance, and monitoring of DNR-Office of Conservation installed observation/vent wells (ORW 1 – 4) installed in the Bayou Corne area, upon obtaining landowner access but by no later than November 22, 2012.

Specifically, to the extent necessary to protect public safety and the environment, have the observation/vent wells flare twenty-four (24) hours a day and seven days a week. Operation of the observation, maintenance, and monitoring of vent wells includes at a minimum: **a)** recording gas flow and pressure on an hourly basis, **b)** ensuring that any flame which extinguishes either automatically re-lights and/or is restarted manually

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when necessary; **c)** further provide any needed equipment, such as flare, flow line, separator, frac tank (if needed), and propane for pilot. At such time that conditions no longer require continuous venting/flaring in order to protect public safety and the environment, Texas Brine Company LLC (T149) shall petition this office for approval to change the operational activity associated with these wells.

If landowners refuse to allow access and/or delay Texas Brine Company LLC (T149) from undertaking daily operation, maintenance, and monitoring of these wells, provide evidence in writing to this office and to the Assumption Parish Office of Homeland Security and Emergency Preparedness as soon as possible, but no later than the November 22, 2012 deadline.

5) By November 16, 2012, initiate installation of a containment system to prevent to the greatest extent practicable any dissolved concentrations of total petroleum hydrocarbons (TPH), elevated chlorides, or total dissolved solids (TDS) in the surface water within the sinkhole and surrounding area from migrating in such a manner that will damage the environment. At the same time initiate regular monitoring of surface water both inside and outside the containment system for TPH, chlorides, and TDS, and record the results. Recorded results of the surface water monitoring shall be provided to this office weekly. If the containment system installed is later determined to be insufficient for preventing to the greatest extent practicable these dissolved concentrations from damaging the environment, additional actions will be required.


It is further declared that, consistent with La. R.S. 30:6.1.B, if Texas Brine Company LLC (T149) fails to begin the actions listed above within the deadlines set forth, orders demanding compliance and civil penalties may be issued to Texas Brine Company LLC (T149) R.S. 30:1, et seq.

It is further declared that for purposes of this Declaration of Emergency and Directive the required plan and notification described in Order and Directives #2, 3, and 5 above shall be submitted to the Office of Conservation via e-mail at conservationorder@la.gov. Please reference “Emergency Declaration – Texas Brine Company LLC – 11/12/2012” on any and all related correspondence.

In the event Texas Brine Company LLC (T149) believes it is aggrieved by this action, then within 20 days of receipt of this Emergency Declaration and Directive, Texas Brine Company LLC (T149) may make a written request for a public hearing. A public hearing request must be accompanied by a check or money order in the non-refundable amount of \$755 as provided by LAC 43:XIX.Chapter 7, or the request for hearing will be denied. Be advised that pursuant to La. R.S. 30:6.1.D, “any request for hearing, appeal, or request for review [of this emergency declaration and directive] shall not suspend the implementation of the action ordered.”

Texas Brine Company LLC's (T149) failure to request a hearing, or to file an appeal, or the withdrawal of a request for hearing on this Emergency Declaration and Directive shall not preclude Texas Brine Company LLC (T149) from contesting the commissioner's findings of facts in any subsequent administrative or judicial proceeding or action.

SO DECLARED, ORDERED, AND DONE this 12th day of November 2012 at Baton Rouge, Louisiana.



JAMES H. WELSH
COMMISSIONER OF CONSERVATION

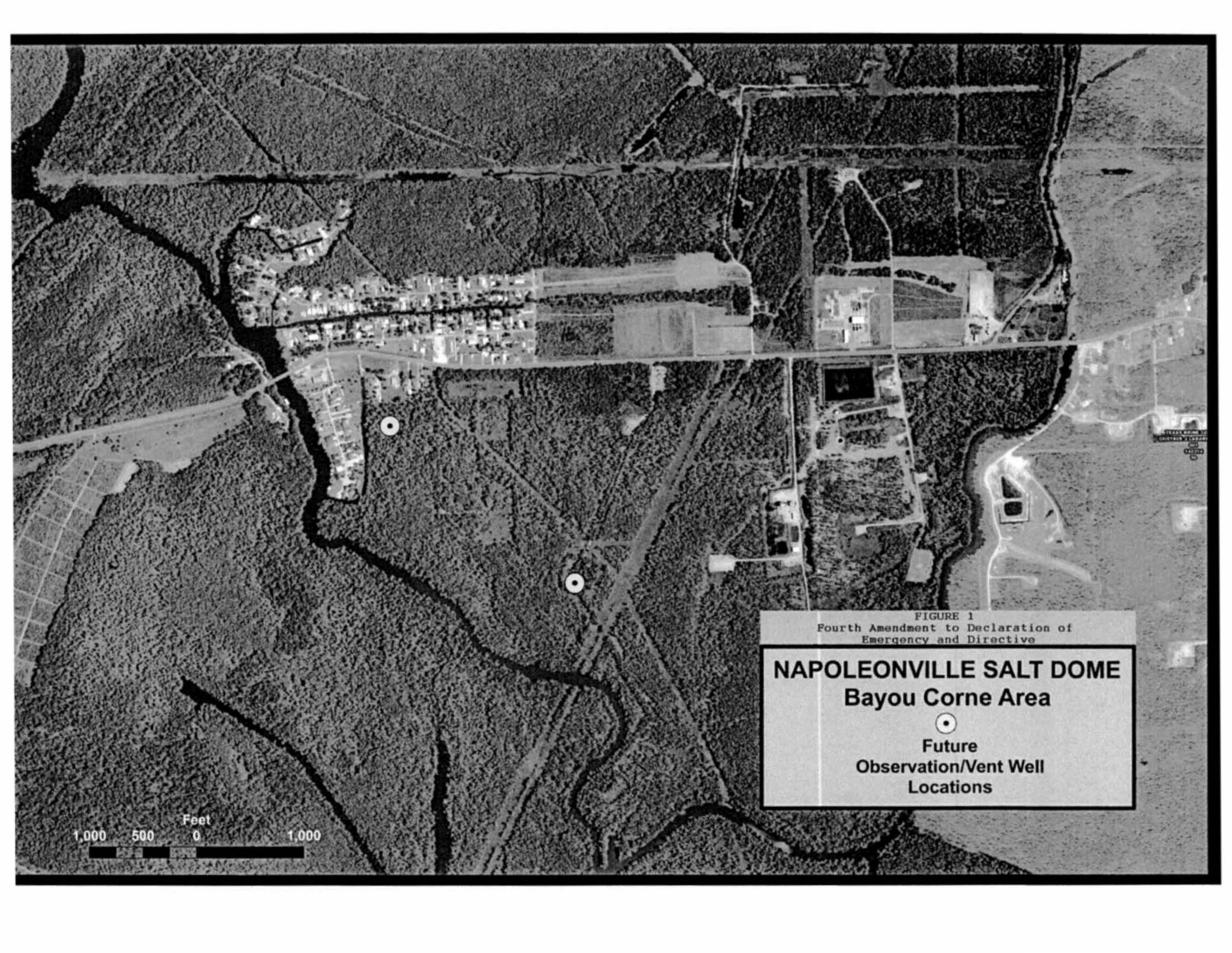


FIGURE 1
Fourth Amendment to Declaration of
Emergency and Directive

**NAPOLEONVILLE SALT DOME
Bayou Corne Area**

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**Future
Observation/Vent Well
Locations**

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